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1 Harnessing chaos for image synthesis

Michael F. Barnsley, Arnaud Jacquin, Francois Malassenet, Laurie Reuter, Alan D. Sloan

June 1988 **ACM SIGGRAPH Computer Graphics , Proceedings of the 15th annual conference on Computer graphics and interactive techniques**, Volume 22 Issue 4

Full text available: pdf(5.14 MB) Additional Information: full citation, abstract, references, citings, index terms

Chaotic dynamics can be used to model shapes and render textures in digital images. This paper addresses the problem of how to model geometrically shapes and textures of two dimensional images using iterated function systems. The successful solution to this problem is demonstrated by the production and processing of synthetic images encoded from color photographs. The solution is achieved using two algorithms: (1) an interactive geometric modeling algorithm for finding iterated function system c ...

Keywords: fractals, geometric modeling, iterated function systems, textures

2 IFS Fracial Interpolation for 2D and 3D Visualization

Craig M. Wittenbrink

October 1995 **Proceedings of the 6th conference on Visualization '95**

Full text available: pdf(1.01 MB) Publisher Site Additional Information: full citation, abstract

Reconstruction is used frequently in visualization of one, two, and three--dimensional data. Data uncertainty is typically ignored, and a deficiency of many interpolation schemes is smoothing which may indicate features or characteristics of the data that are not there. In this paper I investigate the use of iterated function systems (IFS's) for interpolation. I show new derivations for fractal interpolation in two and three-dimensional scalar data, and new point and polytope rendering algorithm ...

Keywords: uncertainty visualization, volume rendering, surface interpolation, collages

3 A review of the fractal image compression literature

Dietmar Saupe, Raouf Hamzaoui

November 1994 **ACM SIGGRAPH Computer Graphics**, Volume 28 Issue 4

Full text available: pdf(968.87 KB) Additional Information: full citation, index terms

4 Ray tracing deterministic 3-D fractals
J. C. Hart, D. J. Sandin, L. H. Kauffman
July 1989 **ACM SIGGRAPH Computer Graphics , Proceedings of the 16th annual conference on Computer graphics and interactive techniques**, Volume 23 Issue 3
Full text available: pdf(2.79 MB) Additional Information: full citation, abstract, references, citings, index terms

As shown in 1982, Julia sets of quadratic functions as well as many other deterministic fractals exist in spaces of higher dimensionality than the complex plane. Originally a boundary-tracking algorithm was used to view these structures but required a large amount of storage space to operate. By ray tracing these objects, the storage facilities of a graphics workstation frame buffer are sufficient. A short discussion of a specific set of 3-D deterministic fractals precedes a full description of ...

5 A simple partitioning approach to fractal image compression
Ghim-Hwee Ong, Chorng-Meng Chew, Yi Cao
March 2001 **Proceedings of the 2001 ACM symposium on Applied computing**
Full text available: pdf(602.92 KB) Additional Information: full citation, references, index terms

Keywords: fractal, image compression

6 101 ways to build a Sierpinski Triangle
Cliff Reiter
June 1997 **ACM SIGAPL APL Quote Quad**, Volume 27 Issue 4
Full text available: pdf(624.78 KB) Additional Information: full citation, citings, index terms

7 Efficient antialiased rendering of 3-D linear fractals
John C. Hart, Thomas A. DeFanti
July 1991 **ACM SIGGRAPH Computer Graphics , Proceedings of the 18th annual conference on Computer graphics and interactive techniques**, Volume 25 Issue 4
Full text available: pdf(3.60 MB) Additional Information: full citation, abstract, references, citings, index terms

Object instancing is the efficient method of representing an hierarchical object with a directed graph instead of a tree. If this graph contains a cycle then the object it represents is a linear fractal. Linear fractals are difficult to render for three specific reasons: (1) ray-fractal intersection is not trivial, (2) surface normals are undefined and (3) the object aliases at all sampling resolutions.Ray-fractal intersections are efficiently approximated to sub-pixel accuracy using procedural ...

Keywords: covers, fractal, object instancing, procedural modeling, ray tracing

8 A fast Gibbs sampler for synthesizing constrained fractals
Baba C. Vemuri, Chhandomay Mandal
October 1996 **Proceedings of the 7th conference on Visualization '96**
Full text available: pdf(2.61 MB) Publisher Site Additional Information: full citation, references, index terms

9 Construction of fractal objects with iterated function systems
Stephen Demko, Laurie Hodges, Bruce Naylor
July 1985 **ACM SIGGRAPH Computer Graphics , Proceedings of the 12th annual conference on Computer graphics and interactive techniques**, Volume 19 Issue 3
Full text available: pdf(4.74 MB) Additional Information: full citation, abstract, references, citings, index terms

In computer graphics, geometric modeling of complex objects is a difficult process. An important class of complex objects arise from natural phenomena: trees, plants, clouds, mountains, etc. Researchers are at present investigating a variety of techniques for extending modeling capabilities to include these as well as other classes. One mathematical concept that appears to have significant potential for this is fractals. Much interest currently exists in the general scientific community in using ...

10 Paralex: an environment for parallel programming in distributed systems
Özalp Babaoğlu, Lorenzo Alvisi, Alessandro Amoroso, Renzo Davoli, Luigi Alberto Giachini
August 1992 **Proceedings of the 6th international conference on Supercomputing**
Full text available: pdf(1.07 MB) Additional Information: full citation, abstract, references, citings, index terms

Modern distributed systems consisting of powerful workstations and high-speed interconnection networks are an economical alternative to special-purpose super computers. The technical issues that need to be addressed in exploiting the parallelism inherent in a distributed system include heterogeneity, high-latency communication, fault tolerance and dynamic load balancing. Current software systems for parallel programming provide little or no automatic support towards these issues and require ...

11 When the interface is a talking dinosaur: learning across media with ActiMates Barney
Erik Strommen
January 1998 **Proceedings of the SIGCHI conference on Human factors in computing systems**
Full text available: pdf(1.19 MB) Additional Information: full citation, references, citings, index terms

Keywords: childern, interactive media, interface, learning

12 A transitive closure and magic functions machine
Jerome Robinson, Simon Lavington
July 1990 **Proceedings of the second international symposium on Databases in parallel and distributed systems**
Full text available: pdf(1.15 MB) Additional Information: full citation, abstract, references, index terms

An extended version of our SIMD Relational Algebraic Processor is presented. In addition to the usual relational and set operations the new machine has the ability to recycle its responder sets internally. This allows it to perform repeated joins, for example, without external intervention and so achieve operations such as path discovery and transitive closure in graphs stored as relations, and to evaluate various types of recursive query. The many compiled methods for recursive query evalu ...

13 Minimizing function-free recursive inference rules
Jeffrey F. Naughton
January 1989 **Journal of the ACM (JACM)**, Volume 36 Issue 1

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1 **A new improved collage theorem with applications to multiresolution fractal image coding**
Oien, G.E.; Baharav, Z.; Lepsoy, S.; Karnin, E.;
Acoustics, Speech, and Signal Processing, 1994. ICASSP-94., 1994 IEEE International Conference on , Volume: v , 19-22 April 1994
Pages:V/565 - V/568 vol.5

[Abstract] [PDF Full-Text (324 KB)] **IEEE CNF**

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Image Processing, 1997. Proceedings., International Conference on , Volume: 2 , 26-29 Oct. 1997
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[Abstract] [PDF Full-Text (504 KB)] **IEEE CNF**

Print Format

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Ashlock, D.; Golden, J.B., III.;
Evolutionary Computation, 2000. Proceedings of the 2000 Congress on , Volume: 2 , 16-19 July 2000
Pages:1160 - 1167 vol.2

[Abstract] [PDF Full-Text (660 KB)] **IEEE CNF**

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4 **Code-excited iterated function prediction**
Zhicheng Wang;
Circuits and Systems, 1996. ISCAS '96., 'Connecting the World'., 1996 IEEE International Symposium on , Volume: 2 , 12-15 May 1996
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Computer Graphics and Applications, IEEE , Volume: 16 , Issue: 4 , July 1996
Pages:25 - 33

[Abstract] [PDF Full-Text (1772 KB)] **IEEE JNL**

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Lansky, A.L.; Philpot, A.G.;
Expert, IEEE [see also IEEE Intelligent Systems] , Volume: 9 , Issue: 1 , Feb. 1994

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[Abstract] [PDF Full-Text (1028 KB)] **IEEE JNL**

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Electronics Letters , Volume: 30 , Issue: 1 , 6 Jan. 1994
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10 **Iterative collage coding for fractal compression**
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